

**Before the  
Federal Communications Commission  
Washington, D. C. 20554**

In the Matter of	)	
	)	
Carrier Current Systems, including Broadband over	)	
Power Line Systems	)	
	)	
Amendment of Part 15 regarding new requirements	)	ET Docket No 04-37
and measurement guidelines for Access Broadband	)	
over Power Line Systems	)	

**Reply Comments of Jan A. Tarsala**

1. These Reply Comments address Section 4, "Ionospheric Propagation of BPL Signals", in the *Technical Appendix to the NTIA Comments on the BPL NPRM* as well as my own Comments as filed with the Commission in this Notice of Proposed Rulemaking ET Docket 04-37 (the *Docket*).

2. In its *Technical Appendix*, the NTIA has characterized the analysis presented therein as "preliminary", and I will demonstrate below how certain engineering assumptions made during their analysis can profoundly skew the analysis results and, therefore, the conclusions to be drawn from them.

3. The sensitivity of the NTIA analysis to engineering assumptions is associated with the Adjustment Factors given in Table 4-2 and with the number of active BPL devices computed in accordance with Footnote 11. The title of the Table betrays its usage: by manipulating these correctives, the NTIA has cleverly been able to conclude a "median increase in ambient noise due to the assumed extensive deployment of BPL devices would be less than 1 dB." A different conclusion results from a different, but equally plausible, set of engineering assumptions.

4. For example, the NTIA has the BPL devices operating levels 4 dB below the Part 15 limits, but offers no support for this presumption. On the contrary, BPL operators have no incentive whatsoever to operate their systems below the Part 15 limits and, indeed, every incentive to maximize their Quality of Service by pushing their systems up to the regulatory limits. Instead of 4 dB, the NTIA analysis should have used a 0 dB corrective, resulting in a computed BPL noise level 4 dB higher.

5. The NTIA uses a co-frequency distribution factor of 6 dB, again without substantiation. A more likely corrective is 3 dB, *i.e.* adjacent BPL repeaters (which will be more prevalent than BPL injectors as will be discussed below) receive on only half their system frequency capability while transmitting on the other, and *visa versa* for adjacent BPL devices. Again, the resulting computed BPL noise level is higher, this time by an additional 3 dB.

6. Finally, the NTIA counts only BPL injectors in computing the number of active BPL devices dispersed across a given population. This ignores the more prevalent BPL repeaters and BPL extractors, and results in an underestimation of the BPL Total Radiated Power stated in Table 4-1. We will, for the sake of this study, assume that BPL extractors can also function as BPL repeaters. Reusing the BPL market penetration of 1 in 4 households assumed by the NTIA, and recognizing that a common number of residences served by a distribution step-down transformer is eight as verified within my own suburban neighborhood, the probability that any transformer has at least one BPL subscriber, and therefore has an associated BPL extractor, is 0.763. Instead of one BPL source for every 120 households as used by the NTIA, the correct number of BPL sources is twelve sources for every 120 households, an 10.8 dB increase in propagated interference.

7. Summing these correctives together (4 dB + 3 dB + 10.8 dB) demonstrates that the NTIA analysis could easily be in error by 17.8 dB! The only conclusion possible under the quite reasonable technical and marketplace assumptions documented *supra* is that the aggregated interference due to ionospheric propagation of BPL signals could degrade the ambient noise floor by between 6.8 dB to 9.4 dB. This would indeed be a clear case of harmful interference.

I thank the Commission for its attention to these my *Reply Comments*.

Respectfully submitted this Twenty Second Day of June, 2004, by

      /s/      Jan A. Tarsala      

Jan A. Tarsala, BSEL, MSEE

Licensee of Amateur Radio Station WB6VRN

Trustee of Amateur Radio Club Station K6TY

510 East Wistaria Avenue

Arcadia, California 91006-4831

818.354.4654

wb6vrn@ieee.org